

Work Order ID 60210

Monday, June 28, 2010 3:26:14 PM

Page 1

Item ID: D2741

Accept

Setup Start

Revision ID:

Stop

Item Name: Blade, 350 Skidtube

Start Date: 6/28/2010 Start Qty: 40.00

Cust Item ID:

Required Date: 7/5/2010 Req'd Qty: 40.00

Customer:

Reference:

Approvals:

Process Plan:

Date: 10-6-29

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D2741	Rev C								

100

0.00



Bandsaw

BAND SAW

Memo

0.00

Jeaspa Bandsaw

Cut blanks 13.850" long +0.063" -0.000"

110

0.00



HAAS 1

HAAS CNC VERTICAL MACHINING #1

Memo

0.00

HAAS CNC vertical machine #1

1-Machine per folio FA108

120

0.00



QC

QC2- Inspect parts off machine FAI/FAIB

Memo

0.00

Quality Control



10.7.1

39

10.7.1
M.A 10/07/03

10.7.1
M.A 10/07/03

39

Ph →

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D2741 PAR #: _____ Fault Category: machining NCR: ☒ Yes No DQA: [Signature] Date: 10/07/07
 Resolution: _____ Disposition: _____ QA: N/C Closed: [Signature] Date: 10/09/07

NCR: <u>60210</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
<u>10.7.1</u>	<u>110</u>	<u>Chores too deep.</u> <u>End mill pulled out of collet</u> <u>Caused by either a dull</u> <u>E-mill or by loose collet.</u> <u>Qty x1</u> <u>R.C. process.</u>	<u>[Signature]</u> <u>QSIU12</u>	<u>Scrap and don't replace, no</u> <u>material. Qty x1</u>	<u>[Signature]</u> <u>10.7.1</u>	<u>[Signature]</u> <u>10/07/07</u>	<u>[Signature]</u> <u>10/07/07</u>	<u>[Signature]</u> <u>10/07/07</u>

NOTE: Date & initial all entries

Work Order ID 60210

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Item ID: D2741

Accept



Setup Start



Revision ID:

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Item Name: Blade, 350 Skidtube

Start Date: 6/28/2010 Start Qty: 40.00



Cust Item ID:

Required Date: 7/5/2010 Req'd Qty: 40.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

130

QC8- Inspect parts - second check

0.00

SP 10/07/07

34

1

QC

Memo

0.00

Quality Control

140

Small Fab

0.00

SP 10/07/07

38

Small Fab

Memo

0.00

Small Fab

1-Deburr 2-Bend per Dwg D2741

150

QC5- Inspect part completeness to step on W/O

0.00

SP 10/07/08

counts
x38

QC

Memo

0.00

Quality Control

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 60210

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Item ID: D2741

Accept



Setup Start



Revision ID:

Stop



Item Name: Blade, 350 Skidtube

Start Date: 6/28/2010 Start Qty: 40.00



Cust Item ID:

Required Date: 7/5/2010 Req'd Qty: 40.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

160

Outsource process - Heat Treat

0.00



Outsource I

Memo

0.00

Outsource process - Heat Treat

Issue P/O: 12221 ☐ Harden material as per Dwg D2741 ☐ Min. Ultimate
Tensile Strength = 152 ksi (34-40 HRC) ☐ Min. Yield Tensile Strength = 141
ksi ☐ Test report or Certification required

CL 10/7/18

(38)

170

Receive & Inspect for Damage & Mat'l Certs

0.00



Packaging

Memo

0.00

Packaging

Ensure Test report or Certification attached

6/14/8/3

(38)

180

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

8/10/08/06

(38)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 60210

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Item ID:	D2741	Accept		Setup	Start	
Revision ID:					Stop	
Item Name:	Blade, 350 Skidtube					
Start Date:	6/28/2010	Start Qty:	40.00	Cust Item ID:		
Required Date:	7/5/2010	Req'd Qty:	40.00	Customer:		
Reference:						

Approvals:	Process Plan:	Date:	Tooling:	Date:	Run	Start	
	QC:	Date:	SPC (Y/N):	Date:		Stop	

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190	Small Fab	0.00							
	Small Fab	Memo							
	Small Fab	1-Pass in deburring machine 2-Grind off edges							
	<i>Solo</i> Finishing clean with washin' wipe Before Plc to remove oil!								
200	White Gloss(Ref:4.3.5.2) per QSI005 4.3-Steel	0.00							
	Powdercoat	Memo							
	Powder Coating	START TIME: 10:15	OVEN TEMPERATURE:						
		320° FINISH TIME: 10:45							
210	QC3- Inspect Part Finish	0.00							
	QC	Memo							
	Quality Control								

38 BR 10-9-1.

38 BR 10-9-2

7/10/09/07

38

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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Start Date: 6/28/2010 Start Qty: 40.00



Cust Item ID:

Required Date: 7/5/2010 Req'd Qty: 40.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

220

Identify as per dwg & Stock Location: 466

0.00



Packaging

Memo

0.00

Packaging

6/29/10 (38)

230

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

10/09/07 JSMS
10-9-7

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Monday, June 28, 2010 3:26:18 PM

Page 1

Work Order ID: 60210

Parent Item: D2741

Parent Item Name: Blade, 350 Skidtube



Start Date: 6/28/2010

Required Date: 7/5/2010

Start Qty: 40.00

Required Qty: 40.00

Comments: IPP Rev: D 00.11.15 Removed P/O turning - in house process EC
 IPP Rev: E 06-03-20 As Per Rev C JLM
 IPP Rev: F 06.04.20 Added grinding after heat treating EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M4130NB0.500X03.00 0		Purchased	No			100	f	71.2500	1.1541	48.59368			



4130 Bar 0.500 x 3.00



	Location	Loc Qty	Loc Code
P10.7.1	MAT	47.25	
	114547 ✓	47.25	
	MAT034	24	
	114044	24	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

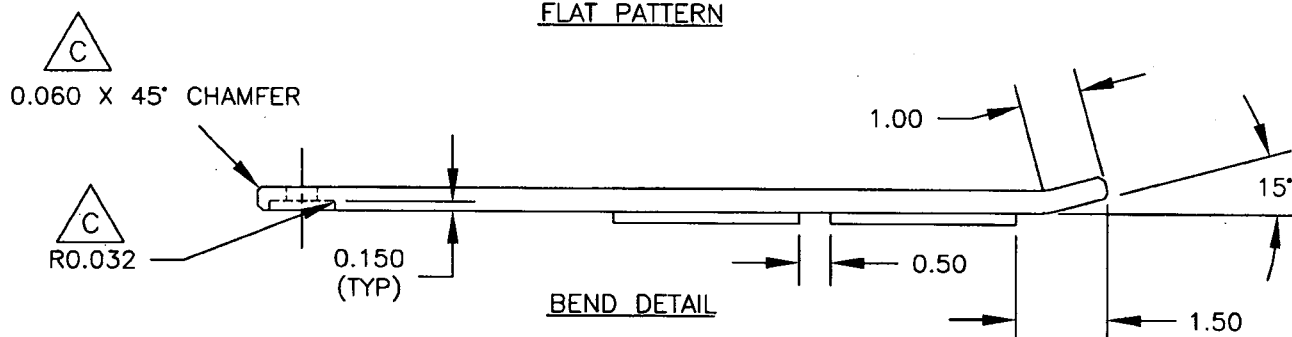
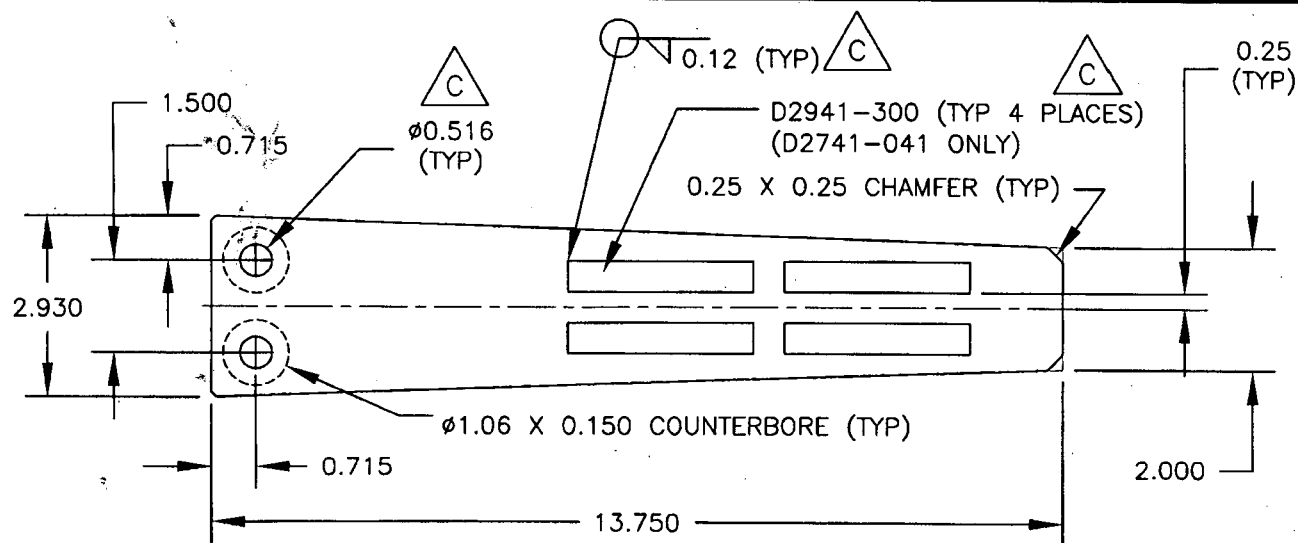
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

• **NOTE:** Date & initial all entries

• H:\FORMS\Quality Assurance\approved QA\NCRWO RevE

DART**RELEASED**
06.02.07**D2741 BLADE**

- 1) MATERIAL: AISI 4130 STEEL 0.375 THICK
MIN. ULTIMATE TENSILE STRENGTH = 152 ksi (34-40 HRC)
MIN. YIELD TENSILE STRENGTH = 141 ksi
- 2) FINISH: POWDER COAT WHITE (REF. 4.3.5.2) PER DART QSI 005 4.3
- 3) ALL DIMENSIONS ARE IN INCHES
- 4) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 5) BREAK ALL SHARP EDGES 0.030 TO 0.060
- 6) TO MAKE D2741-041, WELD D2941-300 (4) AS SHOWN ABOVE.
REMOVE POWDER COAT FROM SURFACE OF D2941-300
- 7) TO MAKE D2741-043, WELD 7560 HARDCOAT ROD INSTEAD OF D2941-300

UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 60210
0810-0-03

SHOP COPY
RETURN TO
ENGINEERING

DESIGN	DRAWN BY	DART AEROSPACE USA, INC.	PORT HADLOCK, WA
CHECKED <i>glt</i>	APPROVED <i>glt</i>	DRAWING NO. D2741	REV. C
DATE 06.01.12		TITLE BLADE	SHEET 1 OF 1
A	98.04.16	NEW ISSUE	SCALE 1:3
B	98.09.01	CHANGE C'SINK TO C'BORE	
C	06.01.12	LARGER HOLE ADD RADIUS AND CHAMFER ADD -041/-043 OPTIONS	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO12221**

Purchase Order Date 7/08/10

PO Print Date 7/08/10

Page Number 1 of 1

Order From :

VC-MET004

METCOR INC.
560 BOUL. ARTHUR SAUVE
SAINT-EUSTACHE, QC J7R 5A8
CA

Contact Name

Vendor Phone

450 473 1884

Vendor Fax

450 491 5498

Vendor Account Nbr

Buyer

Chantal Lavoie

Requisition Nbr

Tax Resale Nbr

10127-2607

Terms

Net 30

Currency

CAD

FOB

Ship To :

DART AEROSPACE LTD

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

FAXED
7/10/10

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty/ Unit of Measure	Ship Method	Unit Price	Extended Price
1	60210	D2741 BLADE	7/20/10 Yes	38.00	Purfolator ground	\$12.2500	\$465.50

Special Inst: HARDEN MATERIAL AS PER DWG
D2741
MINIMUM ULTIMATE TENSILE
STRENGTH = 152 KSI
MINIMUM YIELD TENSILE STRENGTH
= 141 KSI
(34-40HRC)

PO Total:

\$465.50

CERTIFICATE OF CONFORMITY
REQ'D UPON DELIVERY

Change Nbr: 1

Change Date: 7/08/10

No substitution or deviation without
consent.
Certificate of Conformity or Material
Certification required when applicable

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC J7R 5A8
Tel: 450-473-1884 / Fax: 450-491-5498

Recu de Livraison

Order	Shipper	Shipping Seq.
159268	1	43803

Shipped Complete

Customer **215**

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

Shipped To:

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

Purchase Order Number	Customer Shipper No.	Material Type	Order Date	Carrier
PO12221		4130	2010/7/9	puro

Quantity	Part No. / Part Name / Part Description	Pounds
38	D2741 BLADE PER DWG D2741 REV C 2 BOITE DE BOIS	133,76

Container Type	# Of Containers	Container Comments
BOITE DE BOIS	2	

PER PO: SHIP PURO #7684382

PACKING	
----------------	--

Quantity Shipped: 38

Pounds Shipped: 133,76

Quantity Remaining: 0

Pounds Remaining: 0,00

PER PO: SHIP PURO #7684382

Quantity Shipped: 38

Pounds Shipped: 133,76

Signature:

Date:

Shipped ON: 2010/07/30



Rapport d'inspection

Order	Load
159268	1

Customer: 215
 DART AEROSPACE
 1270 ABERDEEN
 HAMKESSURY ON K8A 1K7

Shipped To:
 DART AEROSPACE
 1270 ABERDEEN
 HAMKESSURY ON K8A 1K7

Customer PO / PO du Client	Customer Shipper No.	Material Type / Material	Mat'l Heat Code	Lot Number
FO12221		4130		
PROCESSING SPECIFICATIONS				
SEL HARDEN HARDEN AND TEMPER SAE AMS 2759/1 REV.E				
Requirement	Specified	Tests Performed	Test Results	
HARDNESS	24 - 40 HRC	38	37 - 39 HRC	
TENSILE (KSI)	152 - 182 KSI		166 - 173 KSI	
Quantity	Weight	Part Number / Part Description		
38	133.78	D2741 BLADE PER DWG D2741 REV C 2 BOITE DE BOIS		

COMMENTS

INSPECTOR:

Sm

DATE: 2010-07-29



METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC, J7R 5A8

Tel: 450-473-1884 / Fax: 450-491-5498

Certification

Order	Load
159268	1

Customer 215

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY

ON K6A 1K7

Shipped To:

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY

ON K6A 1K7

Customer PO / PO du Client	Customer Shipper No.	Material Type / Material	Mat'l Heat Code	Lot Number						
PO12221		4130								
PROCESSING SPECIFICATIONS										
SEL HARDEN HARDEN AND TEMPER SAE AMS 2759/1 REV.E										
Requirement	Specified	Tests Performed	Test Results							
HARDNESS	34 - 40 HRC	38	37 - 39 HRC							
TENSILE (KSI)	152 - 182 KSI	166 - 173 KSI								
Quantity	Weight	Part Number / Part Description								
38	133.76	D2741 BLADE PER DWG D2741 REV C 2 BOITE DE BOIS								
Operation	Specified Temp	Specified Soak Time	Atmosphere	Carbon Potential	Q-Media Q-Temp	Furnace# Load #	Start Date	Time In	Time Out	Date Complete
1.00	LAVAGE		si nécessaire							
2.00	COMPTAGE									
PREPARINC										
3.00	1000	1:00 1:30	air			133	07-13-10	9:25	10:30	07-13-10
PREHEAT 1										
4.00	1575	0:40	SEL		BRINE	106	07-13-10	10:30	11:10	07-13-10
SEL HARDE										
5.00	150	0:30	soap			150	07-13-10	11:20	11:50	07-13-10
WASH										
6.00	400	2:00	air			609	07-13-10	11:50	13:55	07-13-10
SNAP TEMF										
7.00										
DIST INSP										
8.00			Sablage							
SANDBLAS										



METCOR INC.

560 BOUL. ARTHUR-SAUVÉ

ST-EUSTACHE, QC, J7R 5A8

Tel: 450-473-1884 / Fax: 450-491-5498

Certification

Order	Load
159268	1

Customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

Shipped To:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

Operation	Specified Temp	Specified Soak Time	Atmosphere	Carbon Potential	Q-Media Q-Temp	Furnace# Load #	Start Date	Time In	Time Out	Date Complete
9.00 TEMPER	875 +/-10°F	2 hrs	air			635	07-27-10	12:50	20:00	07-27-10
10.00 TEMPER 2	925	4 hrs	air			635	07-28-10	17:35	1:30	07-29-10
11.00 HARDN INS										
12.00 SANDBLAS			Sablage							
13.00 HUILAGE			huile							
14.00 FINAL INSP										07-29-10

COMMENTS

APPROVED BY:



DATE: 2010-07-30

We certify that all the information on this report is exact and in accordance with the order requirements. / Nous certifions que toute l'information comprise sur ce rapport est exacte et conforme aux requis du client.